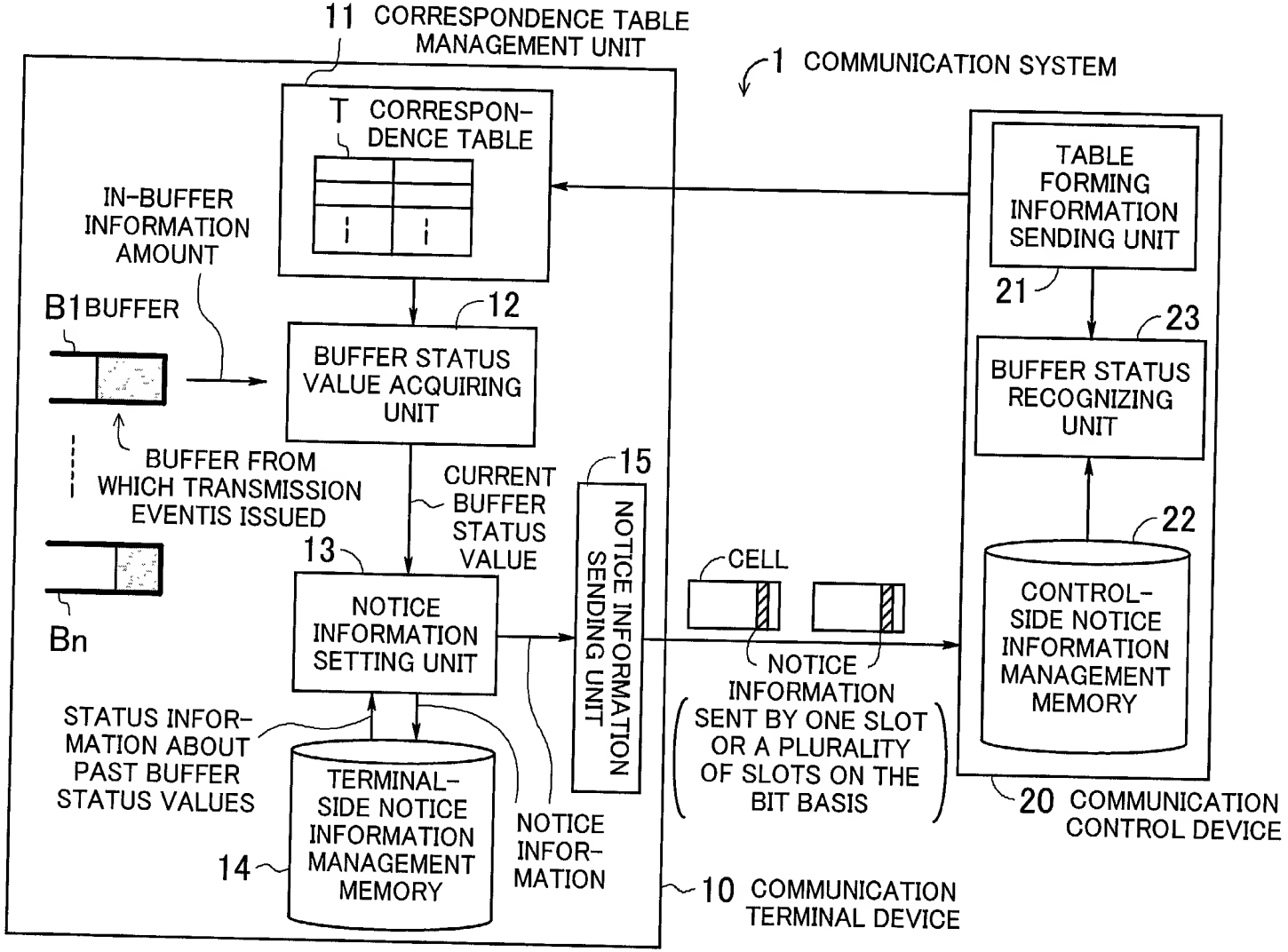

11 CORRESPONDENCE TABLE MANAGEMENT UNIT
1 COMMUNICATION SYSTEM
T CORRESPON-DENCE TABLE
TABLE FORMING INFORMATION SENDING UNIT
21
23
IN-BUFFER INFORMATION AMOUNT
B1 BUFFER
12
BUFFER STATUS VALUE ACQUIRING UNIT
BUFFER STATUS RECOGNIZING UNIT
BUFFER FROM WHICH TRANSMISSION EVENTIS ISSUED
CURRENT BUFFER STATUS VALUE
15
NOTICE INFORMATION SENDING UNIT
22
13
CELL
Bn
NOTICE INFORMATION SETTING UNIT
CONTROL-SIDE NOTICE INFORMATION MANAGEMENT MEMORY
NOTICE INFORMATION SENT BY ONE SLOT OR A PLURALITY OF SLOTS ON THE BIT BASIS
STATUS INFOR-MATION ABOUT PAST BUFFER STATUS VALUES
TERMINAL-SIDE NOTICE INFORMATION MANAGEMENT MEMORY
NOTICE INFOR-MATION
14
20 COMMUNICATION CONTROL DEVICE
10 COMMUNICATION TERMINAL DEVICE

FIG. 1

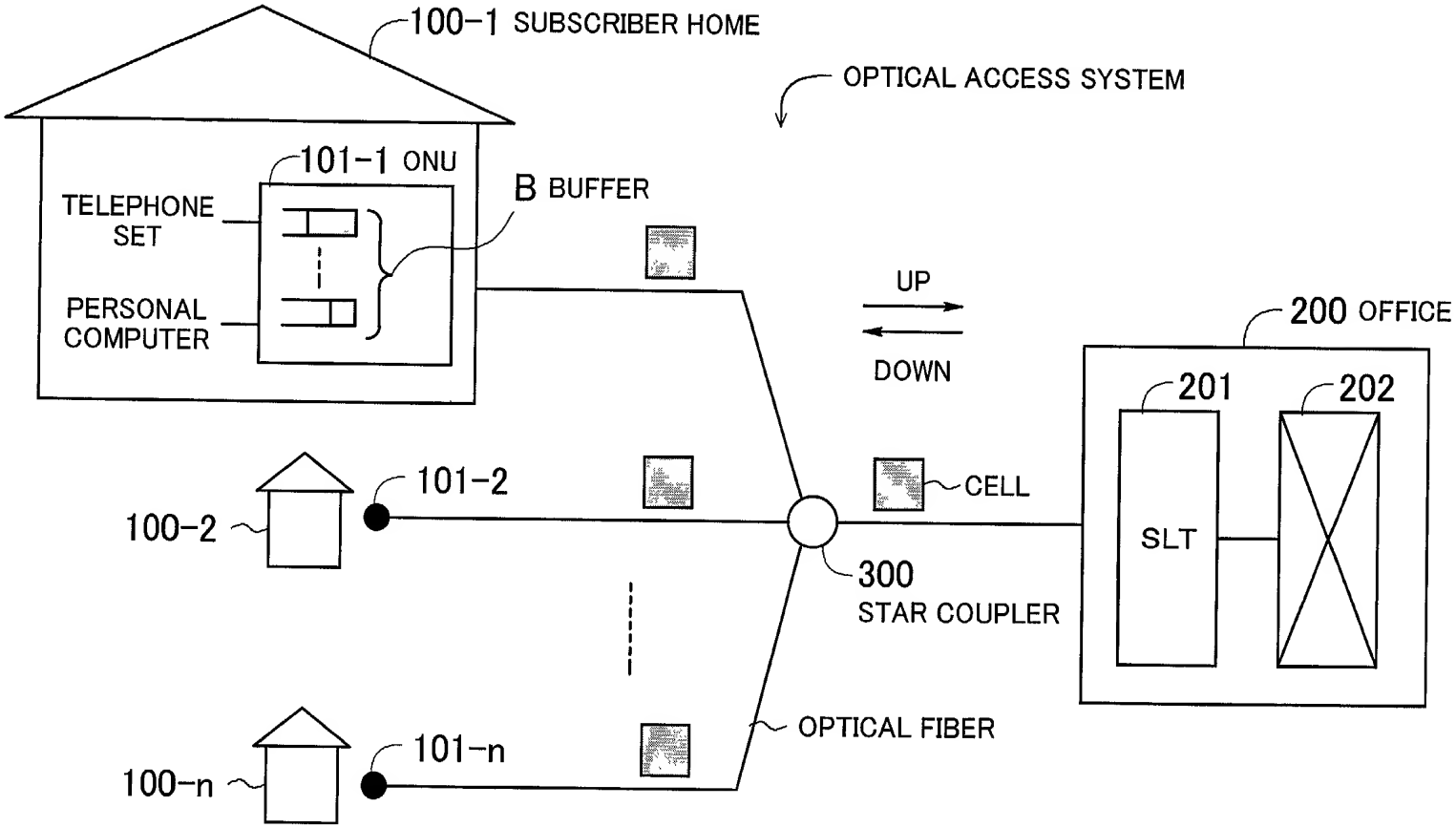

100-1 SUBSCRIBER HOME
OPTICAL ACCESS SYSTEM
101-1 ONU
B BUFFER
TELEPHONE SET
PERSONAL COMPUTER
UP
DOWN
200 OFFICE
201
202
SLT
101-2
100-2
CELL
300
STAR COUPLER
OPTICAL FIBER
101-n
100-n

FIG. 2

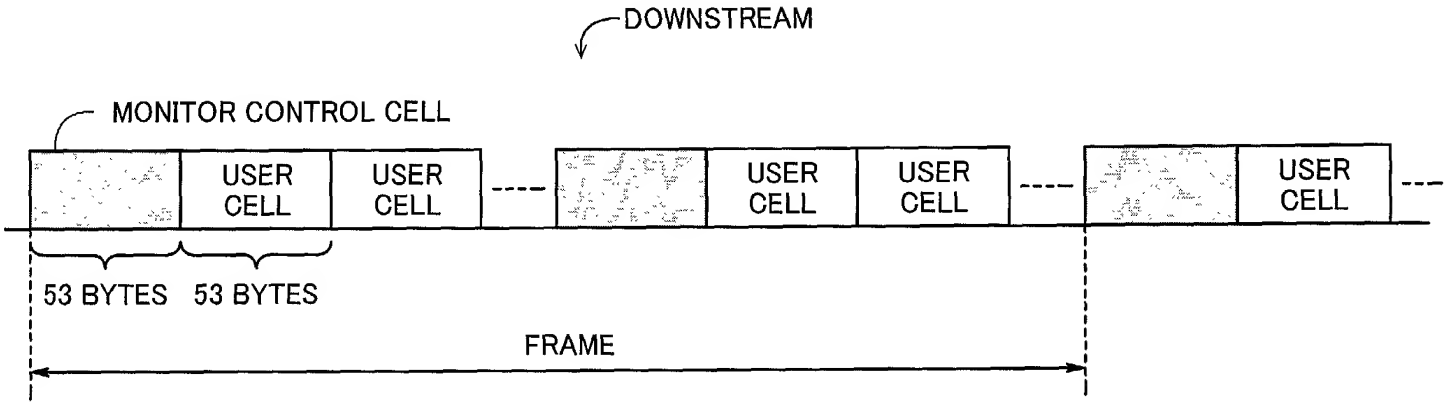

DOWNSTREAM
MONITOR CONTROL CELL
USER CELL
USER CELL
USER CELL
USER CELL
USER CELL
USER CELL
53 BYTES
53 BYTES
FRAME

FIG. 3

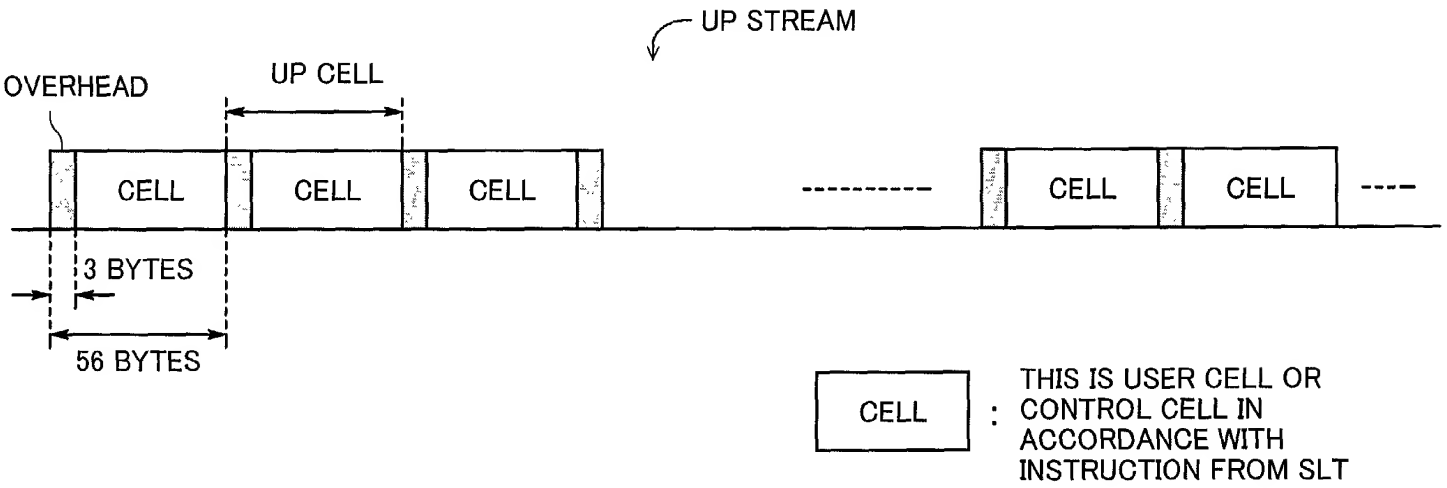

UP STREAM
OVERHEAD
UP CELL
CELL
CELL
CELL
CELL
CELL
3 BYTES
56 BYTES
CELL
: THIS IS USER CELL OR CONTROL CELL IN ACCORDANCE WITH INSTRUCTION FROM SLT

FIG. 4

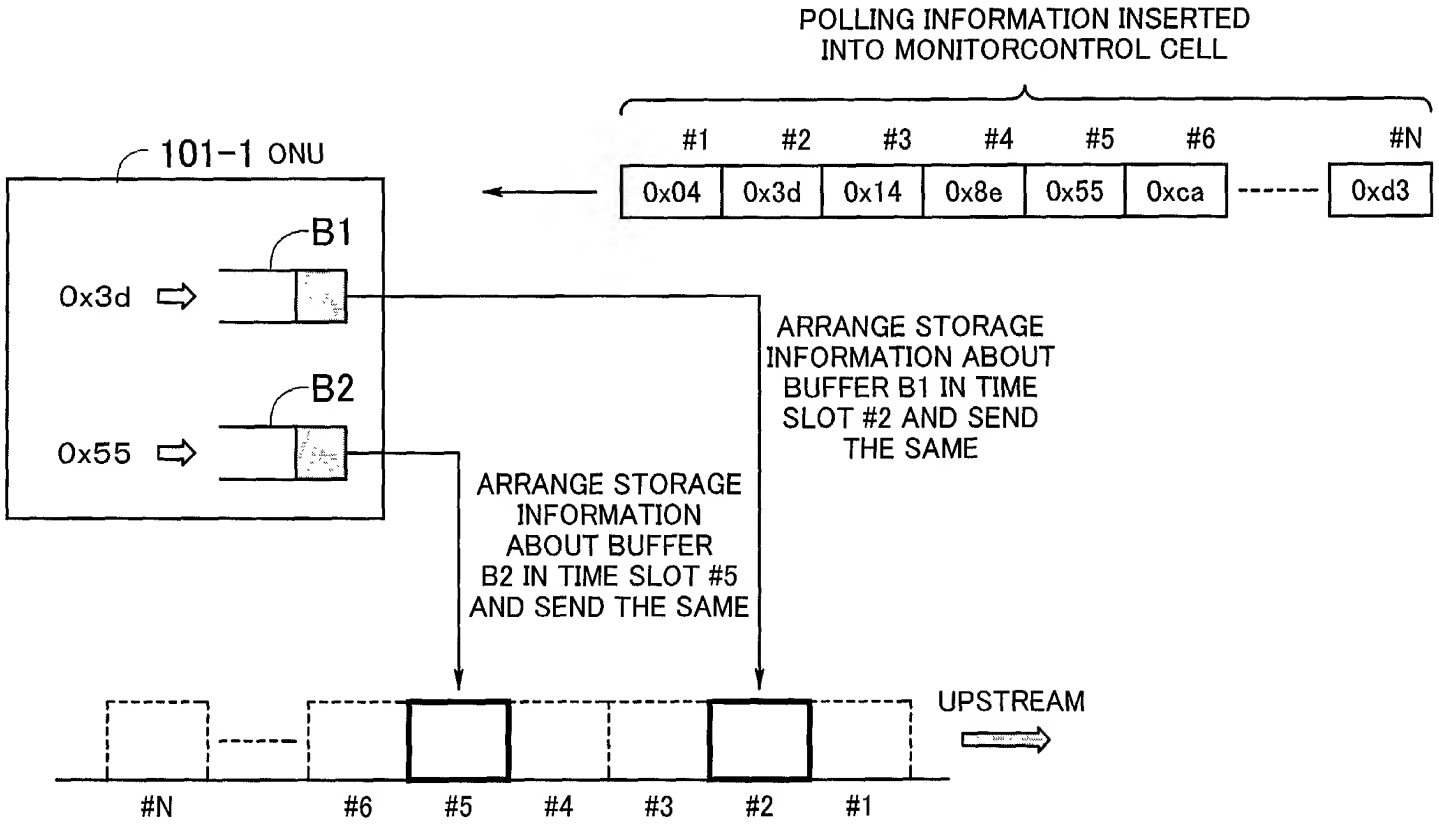

POLLING INFORMATION INSERTED INTO MONITORCONTROL CELL
#1
#2
#3
#4
#5
#6
#N
0x04
0x3d
0x14
0x8e
0x55
0xca
0xd3
101-1 ONU
B1
0x3d
B2
0x55
ARRANGE STORAGE INFORMATION ABOUT BUFFER B1 IN TIME SLOT #2 AND SEND THE SAME
ARRANGE STORAGE INFORMATION ABOUT BUFFER B2 IN TIME SLOT #5 AND SEND THE SAME
UPSTREAM
#N
#6
#5
#4
#3
#2
#1

FIG. 5

FIG. 6(A)
PRIOR ART

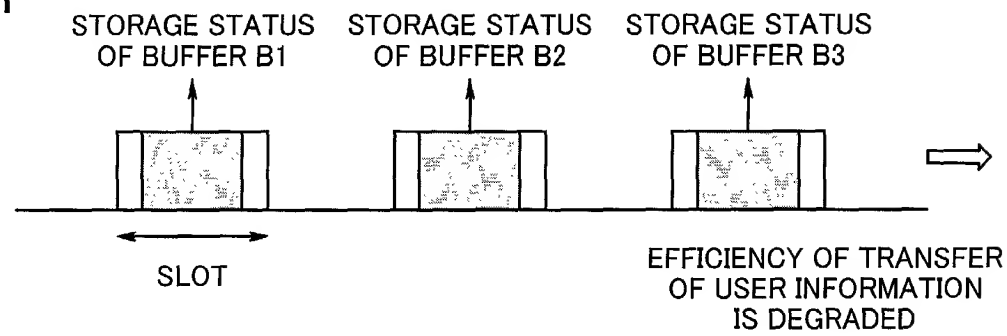
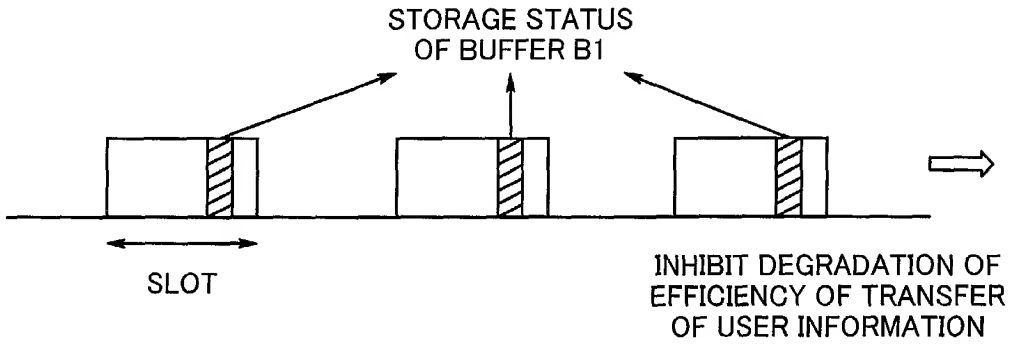


FIG. 6(B)



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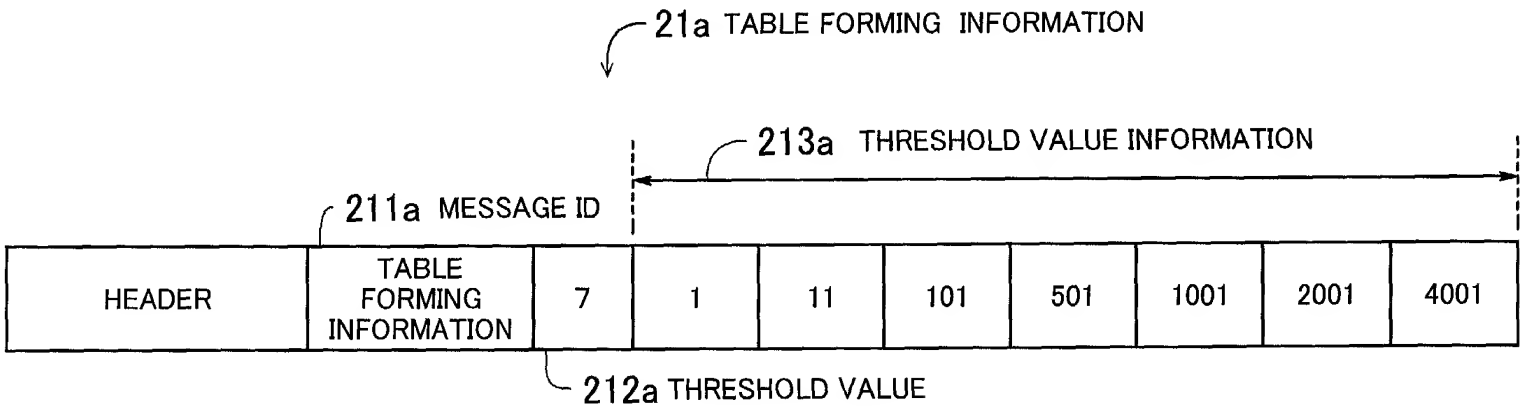


FIG. 7

Ta CORRESPONDENCE TABLE

IN-BUFFER INFORMATION AMOUNT	BUFFER STATUS VALUE
0	0
1～10	1
11～100	2
101～500	3
501～1000	4
1001～2000	5
2001～4000	6
4001 OR MORE	7

(HIERARCHICAL NUMBER N=8)

FIG. 8

FIG. 9(A)

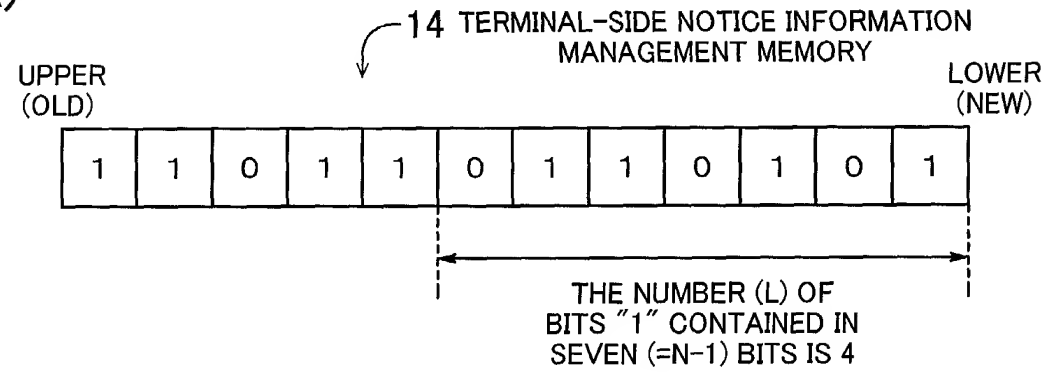
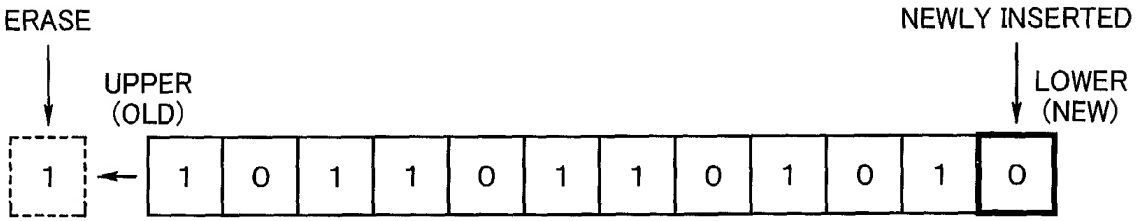

14 TERMINAL-SIDE NOTICE INFORMATION MANAGEMENT MEMORY
UPPER (OLD)
LOWER (NEW)
1 1 0 1 1 0 1 1 0 1 0 1
THE NUMBER (L) OF BITS "1" CONTAINED IN SEVEN (=N-1) BITS IS 4

FIG. 9(B)


ERASE
NEWLY INSERTED
UPPER (OLD)
LOWER (NEW)
1
1 0 1 1 0 1 1 0 1 0 1 0

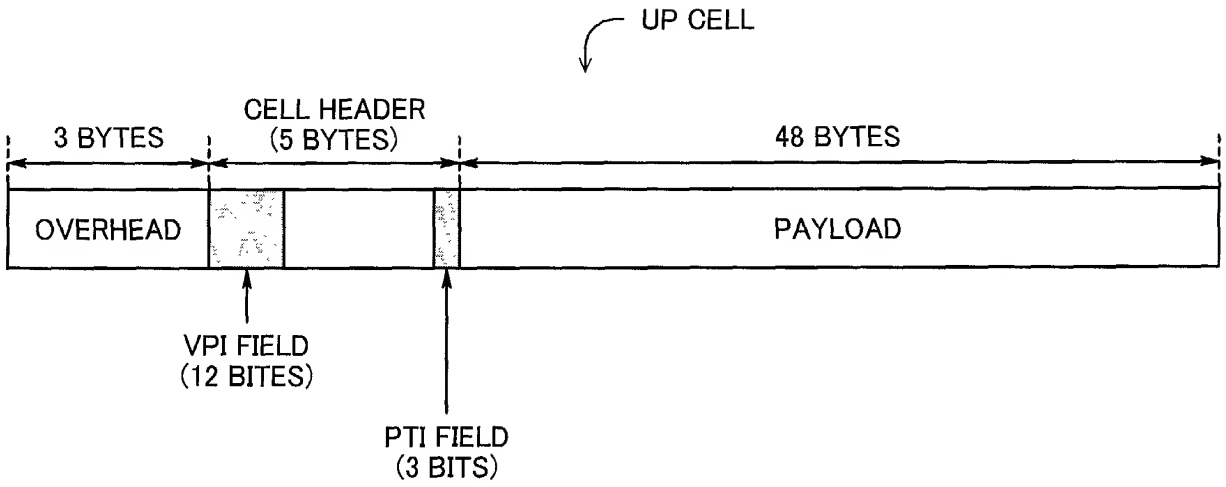

UP CELL
CELL HEADER
(5 BYTES)
3 BYTES
48 BYTES
OVERHEAD
PAYLOAD
VPI FIELD
(12 BITES)
PTI FIELD
(3 BITS)

FIG.10

FIG. 11(A)

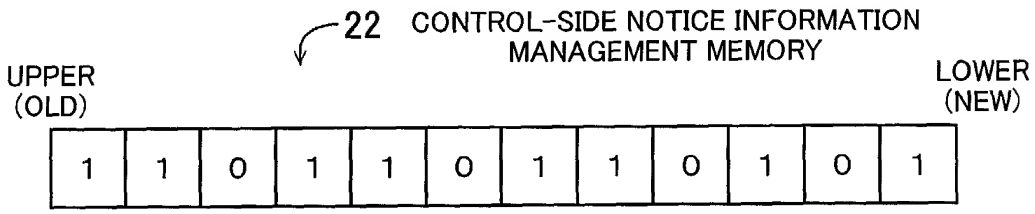
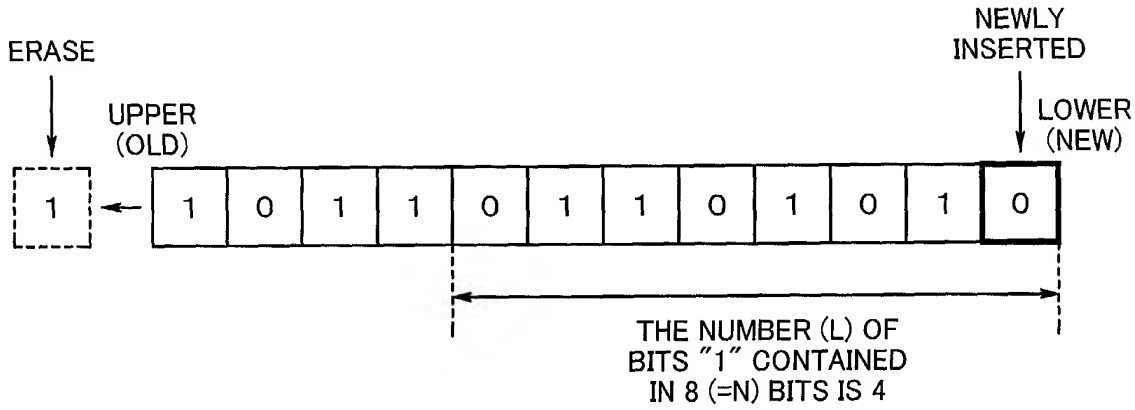


FIG. 11(B)



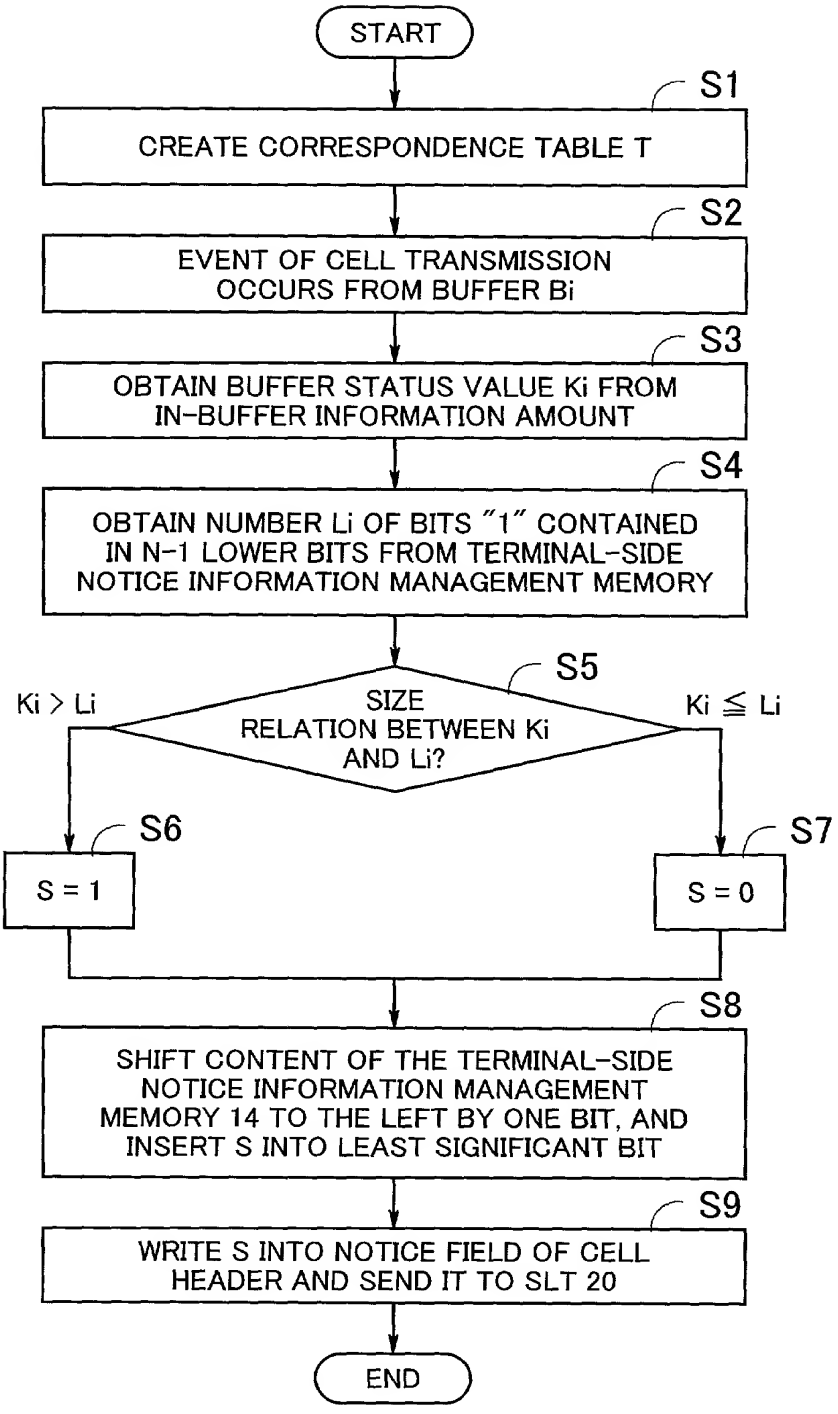

START
S1
CREATE CORRESPONDENCE TABLE T
S2
EVENT OF CELL TRANSMISSION OCCURS FROM BUFFER Bi
S3
OBTAIN BUFFER STATUS VALUE Ki FROM IN-BUFFER INFORMATION AMOUNT
S4
OBTAIN NUMBER Li OF BITS "1" CONTAINED IN N-1 LOWER BITS FROM TERMINAL-SIDE NOTICE INFORMATION MANAGEMENT MEMORY
S5
SIZE RELATION BETWEEN Ki AND Li?
Ki > Li
Ki ≦ Li
S6
S = 1
S7
S = 0
S8
SHIFT CONTENT OF THE TERMINAL-SIDE NOTICE INFORMATION MANAGEMENT MEMORY 14 TO THE LEFT BY ONE BIT, AND INSERT S INTO LEAST SIGNIFICANT BIT
S9
WRITE S INTO NOTICE FIELD OF CELL HEADER AND SEND IT TO SLT 20
END

FIG.12

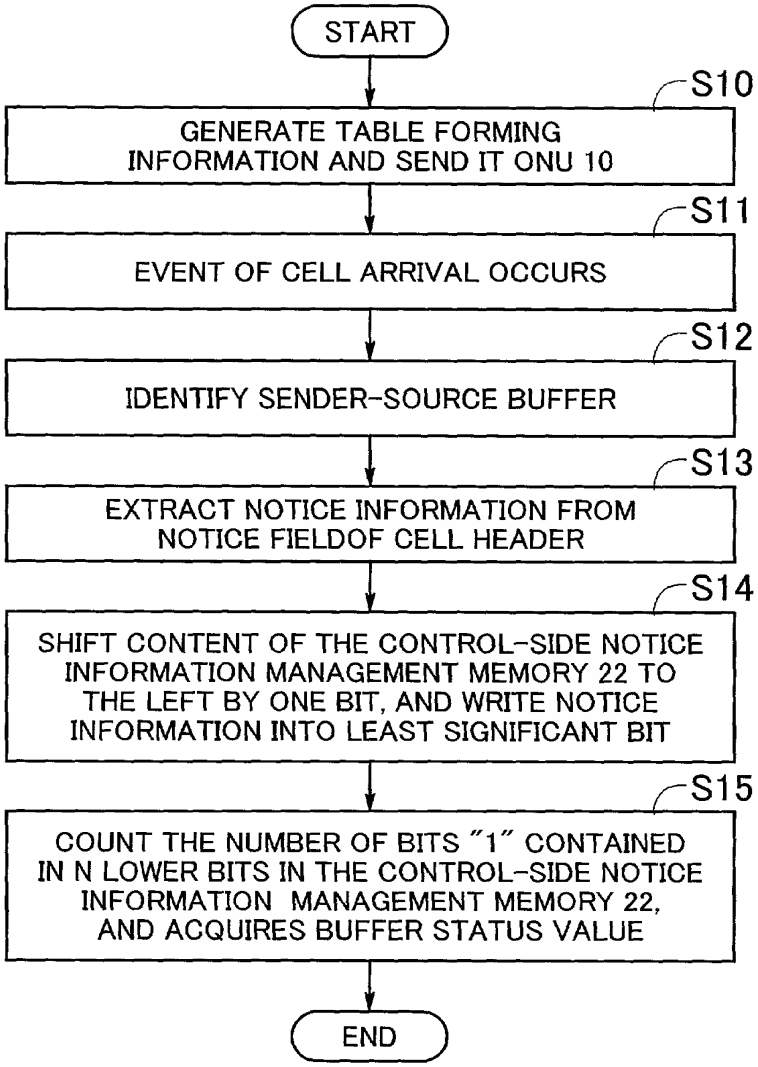

START
S10
GENERATE TABLE FORMING INFORMATION AND SEND IT ONU 10
S11
EVENT OF CELL ARRIVAL OCCURS
S12
IDENTIFY SENDER-SOURCE BUFFER
S13
EXTRACT NOTICE INFORMATION FROM NOTICE FIELDOF CELL HEADER
S14
SHIFT CONTENT OF THE CONTROL-SIDE NOTICE INFORMATION MANAGEMENT MEMORY 22 TO THE LEFT BY ONE BIT, AND WRITE NOTICE INFORMATION INTO LEAST SIGNIFICANT BIT
S15
COUNT THE NUMBER OF BITS "1" CONTAINED IN N LOWER BITS IN THE CONTROL-SIDE NOTICE INFORMATION MANAGEMENT MEMORY 22, AND ACQUIRES BUFFER STATUS VALUE
END

FIG.13

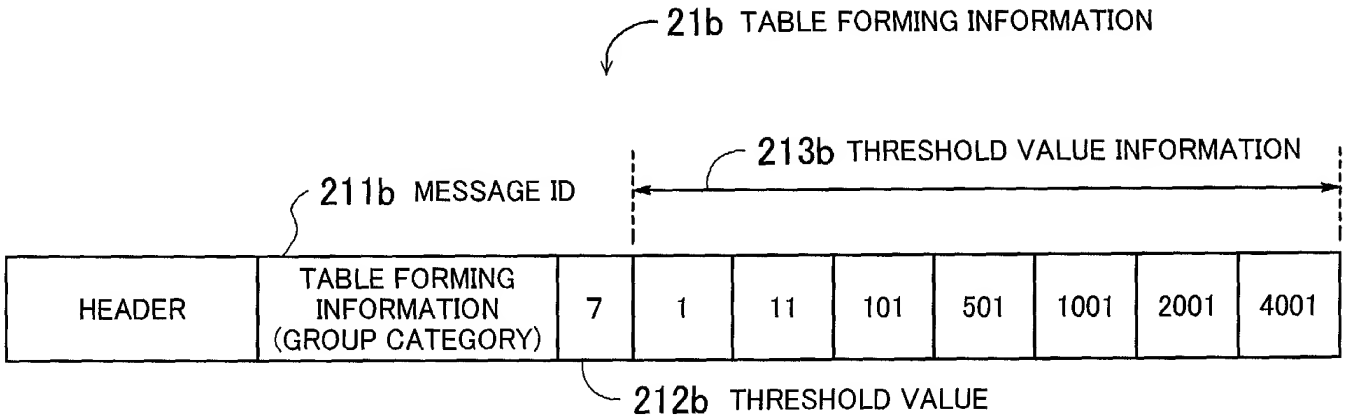

21b TABLE FORMING INFORMATION
213b THRESHOLD VALUE INFORMATION
211b MESSAGE ID
HEADER
TABLE FORMING INFORMATION (GROUP CATEGORY)
7
1
11
101
501
1001
2001
4001
212b THRESHOLD VALUE

FIG. 14

Tb CORRESPONDENCE TABLE

IN-GROUP INFORMATION AMOUNT	GROUP STATUS VALUE
0	0
1～10	1
11～100	2
101～500	3
501～1000	4
1001～2000	5
2001～4000	6
4001OR MORE	7

(HIERARCHICAL NUMBER N=8)

FIG. 15

FIG. 16(A)

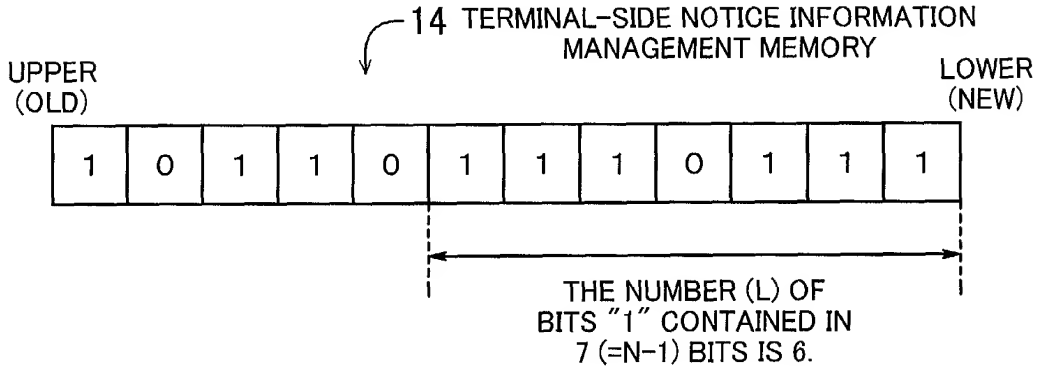


FIG. 16(B)

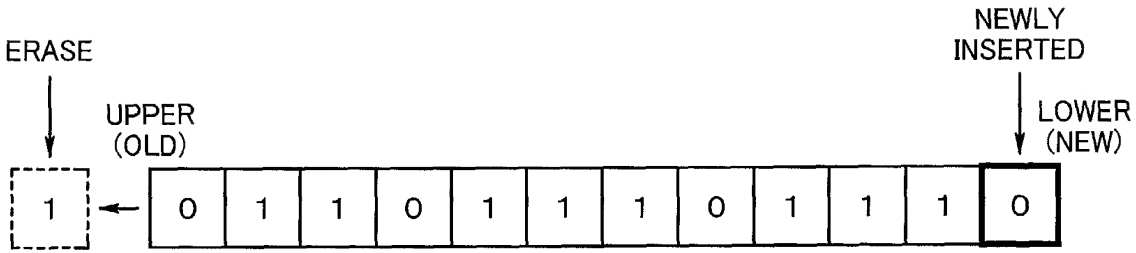


FIG. 17(A)

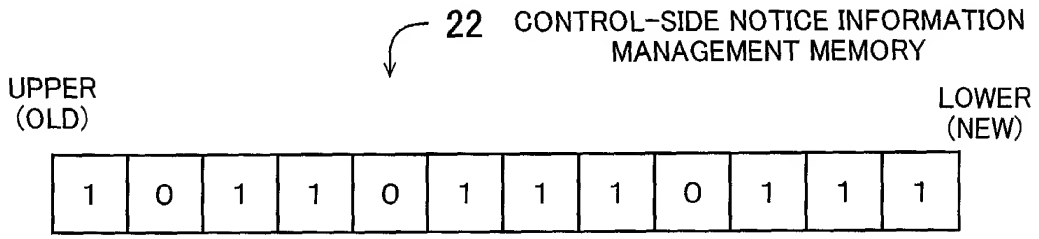
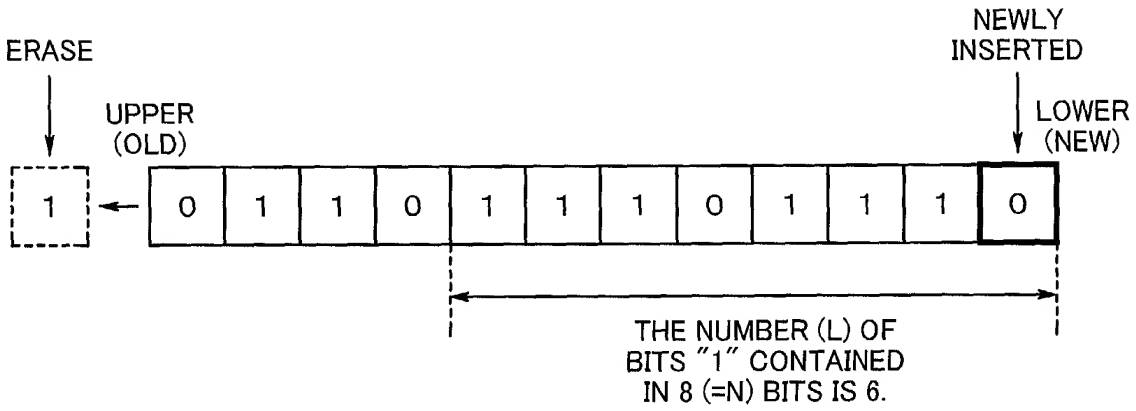


FIG. 17(B)



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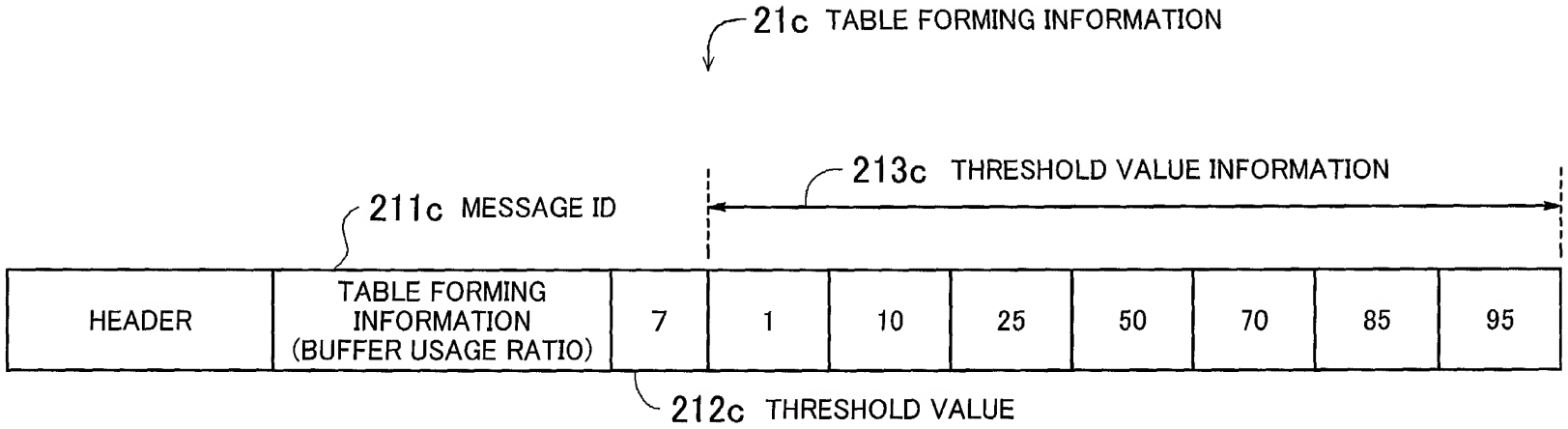


FIG. 18

Tc CORRESPONDENCE TABLE

BUFFER USAGE RATIO (X) [%]	BUFFER STATUS VALUE
0≦X<1	0
1≦X<10	1
10≦X<25	2
25≦X<50	3
50≦X<70	4
70≦X<85	5
85≦X<95	6
95≦X<100	7

FIG. 19

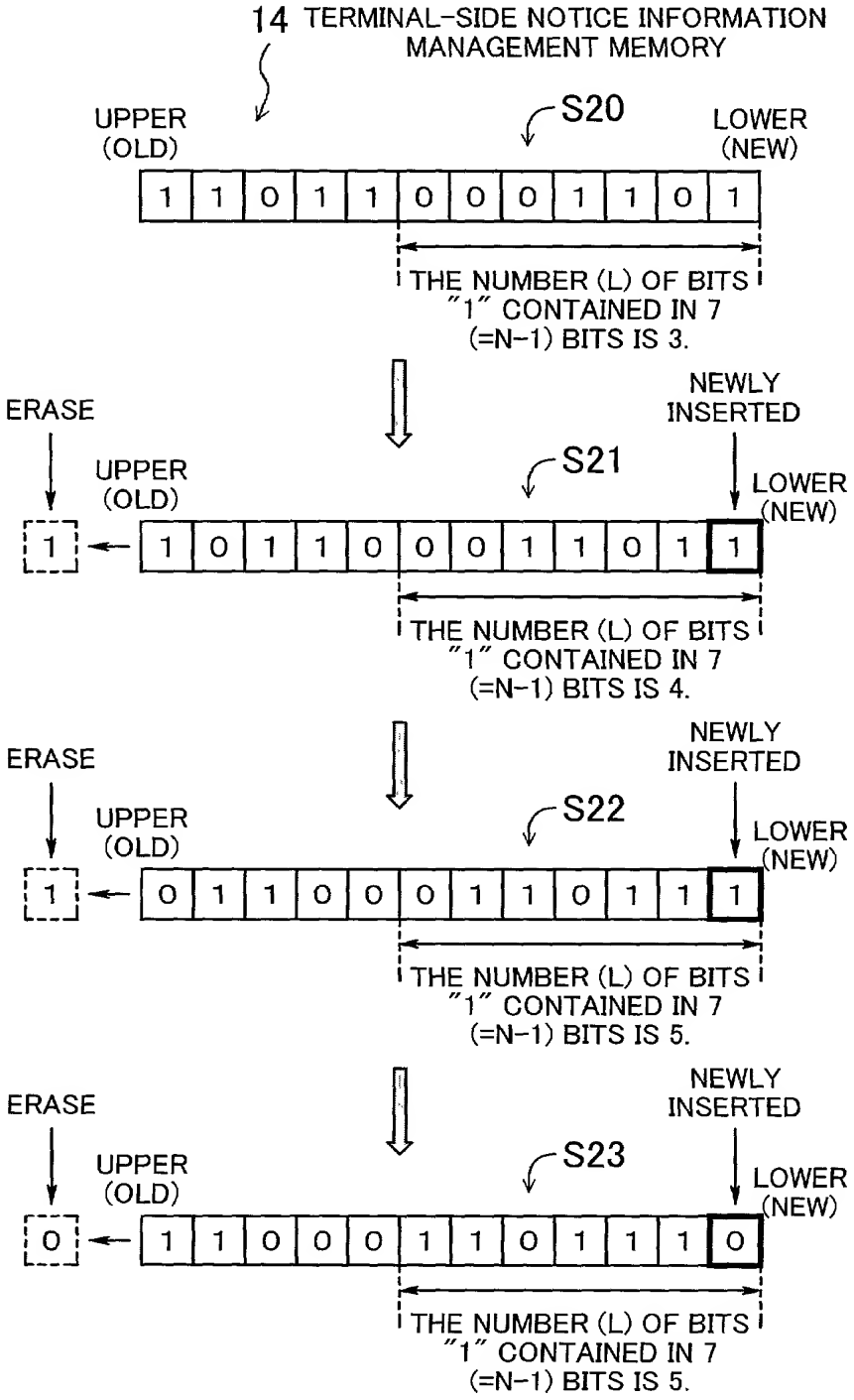

14 TERMINAL-SIDE NOTICE INFORMATION MANAGEMENT MEMORY
UPPER (OLD)
LOWER (NEW)
S20
1 1 0 1 1 0 0 0 1 1 0 1
THE NUMBER (L) OF BITS "1" CONTAINED IN 7 (=N-1) BITS IS 3.
ERASE
NEWLY INSERTED
UPPER (OLD)
LOWER (NEW)
S21
1 1 0 1 1 0 0 0 1 1 0 1 1
THE NUMBER (L) OF BITS "1" CONTAINED IN 7 (=N-1) BITS IS 4.
ERASE
NEWLY INSERTED
UPPER (OLD)
LOWER (NEW)
S22
1 0 1 1 0 0 0 1 1 0 1 1 1
THE NUMBER (L) OF BITS "1" CONTAINED IN 7 (=N-1) BITS IS 5.
ERASE
NEWLY INSERTED
UPPER (OLD)
LOWER (NEW)
S23
0 1 1 0 0 0 1 1 0 1 1 1 0
THE NUMBER (L) OF BITS "1" CONTAINED IN 7 (=N-1) BITS IS 5.

FIG. 20

FIG. 21(A)

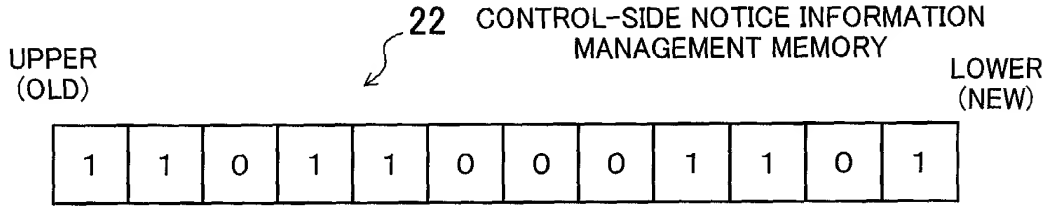
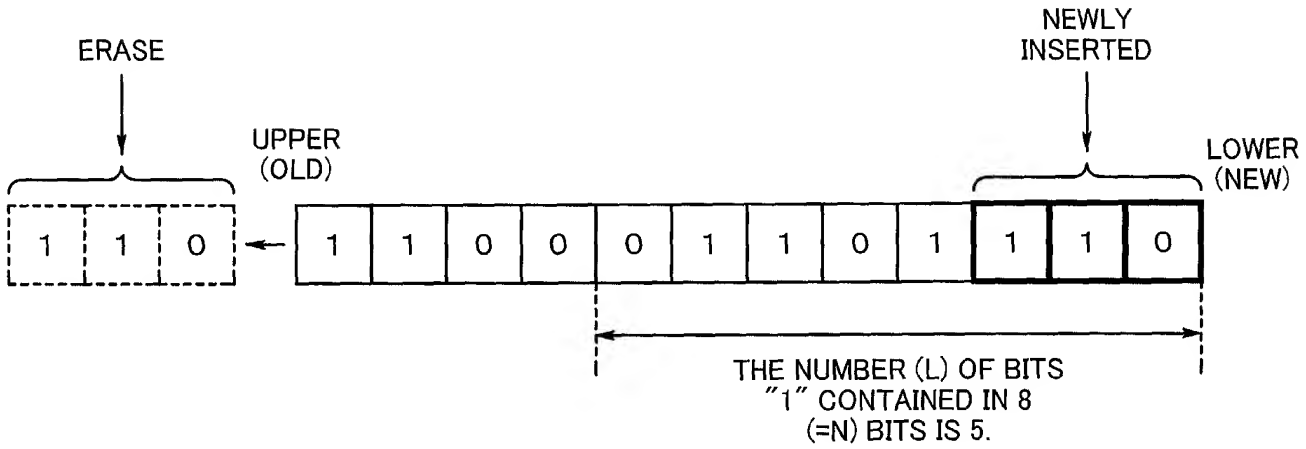


FIG. 21(B)



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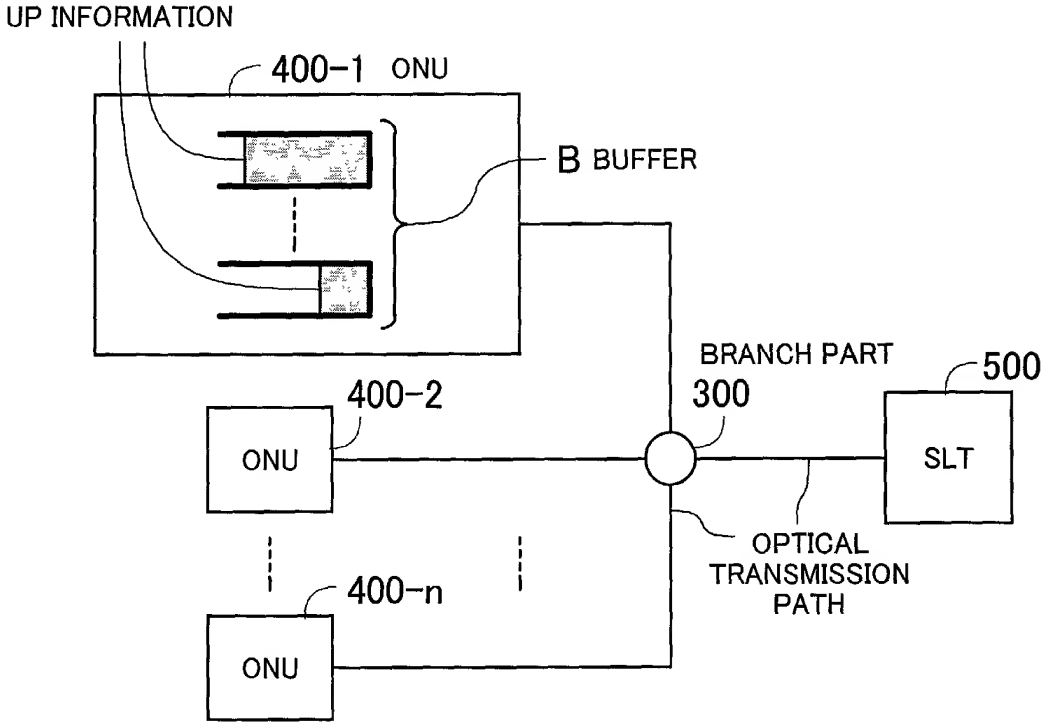

FIG. 22
PRIOR ART